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of the small circle on a sphere, which osculates at a given point T, to a given spherical conic. Let the given cyclic arcs be AC, AC', extending from one of the two points A of their own mutual intersection to the tangent arc CTC', which is well known to be bisected at the point of contact T. On the normal arc NTP, drawn through that given point T, let fall a perpendicular arc AN; draw NC, or NC', and erect CP or $C'P$, perpendicular thereto, and meeting the normal arc in P: the point P, thus determined, will be the pole, or spherical centre of curvature, which was required.

Sir William R. Hamilton communicated a notice by Professor Young, in continuation of a paper by the same author, on the sum of eight squares, read to the Academy on 14th June last. (See Proceedings, Vol. III., p. 526.)

The principal object of the author is to shew that the formula for eight squares, as printed in the part of the Proceedings just referred to, does not admit of extension to the case of sixteen squares, or to any of the more advanced forms. The manner in which the proof of this is conducted may be briefly described as follows. As stated in the former abstract, the construction of the eight-square formula was suggested by a certain law of formation observable in that for four squares. It was under the guidance of this law that the component parts of the more advanced form were constructed and connected together; thus presenting, when completed, the eight rows of binomials which appear in the before-mentioned abstract, and which, from their construction, are necessarily such that if the quantities composing any two binomials in a row are each made zero (which is equivalent to reducing the eight squares to four), the pre-established four-square formula results.

It is easy to see, if the sixteen-square form existed, that it would necessarily involve the subordinate form for eight, exactly in the same way as this latter involves that for four : and, to be correct and general, it must yield the eight-square form when, by the suppression of four of the binomials in any row, the sixteen squares are actually reduced to eight.

Now it is shewn that these conditions cannot be accomplished ; unless, indeed, under special and peculiar limitations, which are pointed out. In proceeding to construct the sixteen-square form, providing, as we go on, for the demands of that for eight, since these are necessarily implied in those for sixteen, we find our progress, beyond a certain stage, to be impossible ; inasmuch as a step further imperatively requires that a preceding step should be modified, which modification is fatal to the accuracy of the portion already constructed. It is hence concluded that the eight-square formula cannot be a particular case of one more general for sixteen, but is itself the most advanced *modular theorem* that exists.

Towards the close of the paper the author enters upon some collateral investigations concerning squares and products; and, among other things, offers a short method of establishing, without imaginaries, a very beautiful triplet theorem discovered by John T. Graves, Esq., and printed, with its investigation, in the Philosophical Magazine for 1845.

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DECEMBER 13TH, 1847.

JOHN ANSTER, LL. D., in the Chair.

THE following letter from Mr. Staunton was read :

"*Longbridge House, near Warwick,*
"*Dec.* 4*th*, 1847.

"GENTLEMEN,—I have the pleasure of receiving, this morning, the Fyshers Irchington matrix, and lose no time in acknowledging its receipt, as I do with additional satisfaction,